SECRET

DD/S REGISTRY
FILE Project "A"

ASPIN -- A SUMMARY

FOREWORD

Project ASPIN was established to take a broad look at the employment of ADP support to the production of intelligence. It was stimulated to a great extent by recommendations made by the President's Foreign Intelligence Advisory Board (PFIAB).

The DD/I, the DD/S&T and the DD/S had representation on the ASPIN Staff. The project was assigned to the DD/I and was subordinated to the DD/I Plans Staff for administration and guidance.

The basic objective of ASPIN was to develop a broad conceptual design for ADP support to intelligence production.

PRECIS

The general condition of ADP to support intelligence production in the Agency is excellent. The number, variety, size, scope and utility of the applications studied compared very favorably with the experiences of industry, the academic community, and other government agencies.

As in other organizations, the Agency has had its most serious difficulties in trying to implement large systems. The primary interactive system of the Agency also leaves something to be desired at this writing.

With increased receipts of information and the capability to manipulate it via computerized files, there has been a tendency to canalize information flow within the Agency. This phenomenon will probably cause us to reconsider our present structure on information centers within the Agency.

The need for a large generalized data management system has been recognized. While the development of such a system is difficult and fraught with pitfalls, the Agency should pursue this objective as a matter of some priority.

The most negative impression gained during the study is that ADP activities within the Agency are poorly managed, i.e., not enough central planning, central coordination, and central control of our ADP resources. To enhance management and control, more complete and articulate documentation of computer project proposals is required. Additionally, a tighter review of such proposals should be undertaken, users of ADP should be charged for the services received and a special advisor to the Executive Director-Comptroller should be appointed to keep management abreast of ADP developments.

On the whole we believe that the Agency has broadly encouraged the use of ADP techniques in its analytical and its collection role as well as in administrative activities.

Computer Applications in Support of Intelligence Production

Applications designed to support production can be characterized in three ways -- Calculation, Information Storage and Retrieval, and Data Reduction. Certain modeling and simulation applications and other special applications tend to be a meld of the three basic characteristics. Most applications developed within the Agency are discrete and are designed to accomplish modest tasks which could not be undertaken without the power of a computer. Production analysts also have been exposed to three relatively large systems, they are:

CHIVE -- Designed to be an ultimate information system which would extract relevant information from all incoming documents, capture these data, store it and retrieve it on demand. These objectives exceeded the resources the Agency was prepared to commit to index, abstract and process the records involved. CHIVE, while a technical success of sorts, was reduced in scope and resulted ultimately in a system termed AEGIS, which presently serves analysts calling on the Central Reference Service for research assistance.

COINS -- This community-wide system has been of virtually no use whatsoever to production analysts. The system is currently under review by Agency management to determine whether and how we should continue with the program. Its basic failings have been the lack of attention to the files incorporated into the system and the complex technical nature of the system.

OCS Interactive System -- This is a large scale effort to provide a general, on-line, time-sharing service for the Agency. It is used to a considerable extent in the development of computer programs for customer offices, as a generalized storage and retrieval system and as a very powerful computational asset. It has been beset with difficulties but continued development to increase its versatility and reliability is definitely warranted.

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Problems in Computer Applications

The principle problem in implementing a computer application is the delay incurred between the conception of the application and its delivery as an operating system. These delays stem from the following:

a. Difficulty in defining the objectives and goals of the application.

b. Lack of appreciation of the difficulty and complexity of preparing data inputs for the computer.

c. Difficulty in communications between substantive analysts and computer analysts.

d. Lack of a central point of project control, i.e., substantive office resource control and OCS resource control.

Until an analyst (or any customer) has worked his way through to -- and begun to support -- a sustained operating computer application, he can seldom be convinced of the complexity of data preparation, data formatting, and data testing. All users attest to this.

The communications problem between customers and programmers is a serious deterrent to effective ADP success. In one effort to overcome this problem APSIN has recommended the assignment of applications programmers to production components to provide better understanding of their mutual problems.

Considerable repetition or overlap in program development has been observed among the several data processing centers in the Agency.

File maintenance has been identified as an area posing serious problems in data processing within the Agency.

Extreme caution must be exercised in making files available for "public" use within the Agency. While ASPIN endorses the creation of general or joint files, it wished to underline that their development and operation is a complex matter which must be carefully controlled if they are not to misinform rather than inform the user.

The problem of ADP security is treated exhaustively and well in a large number of publications. The ARPA report Security Controls for Computers and the USIB Computer Security Subcommittee document Identification of Computer Security Problem Areas IBSEC - CSS - R -2, present the best treatment of this subject.

General Conclusions and Recommendations

A procedure be developed to integrate new collections systems with data forwarding systems and ADP systems through the use of standard formats.

That one or more general data management systems be acquired from commercial vendors for use in the Agency.

That the Agency retain its present capability for development of unique systems.

That mechanisms be developed to enhance communications between customers and computer oriented persons.

That the personnel resources required to explore, develop and test new techniques and concepts be MADE available by the Agency.

That the present interactive, time-sharing system be expanded to provide for remote batch processing and remote job entry tasks.

That all interactive applications be homed on one computer rather than employing dedicated computers.

The COINS experiment should be evaluated at the earliest moment to provide guidance for Agency participation in community efforts.

That the IPB concentrate on and define standards for ADP, particularly for applications serving more than one component.

Office of Computer Service Activities

The Office of Computer Services developed from an amalgamation of the business and administrative data processing activities of the Agency and the rapidly growing scientific computational activities which evolved from the creation of the DD/S&T.

The Office of Computer Services: 1) operates a general computer processing center for the Agency and 2) provides computer programming and computer applications design as a service of common concern.

Customers tend to be pleased with the service they receive from OCS. Everyone would like his work done more quickly but few customers thought their processing requests received less than satisfactory attention.

The rapid and dynamic technical changes in the entire computer industry has engendered uncertainty on the part of OCS personnel and customers as to what to expect in the near term. As system changes take place they usually have a direct impact on individual applications with an attendant reworking of programs that does not contribute to the utility of the application. We have recommended that a mechanism for communicating plans for major system changes be instituted.

It is the ASPIN opinion that problem solution is and must be separate form computer operations. This feeling contributes to our recommendation that applications programmers be assigned to customer offices for tours of duty.

A complete set of procedures should be published and maintained for the use of customers.

A strong computer graphics capability should be developed by OCS in concert with NPIC/AID and ORD/An.

OCS is encouraged to acquire and test a proprietary general data management system; this action should be coordinated with user offices and with other major computer centers within the Agency.

A Central Reference System

Considerable study and analysis of a central reference system within the Agency was undertaken by ASPIN. We arrived at a conclusion that the reference facility of the future should be one which would route a request for information to the appropriate substantive source rather than a reference service being a sole source or repository of information used by and generated by the Agency. This judgement is based, primarily, on the increased specialization which has resulted in information tending to reside with those who have the ability to interpret it and relate it to other activities.

A central reference system should provide also for the rapid and accurate dissemination of intelligence information and for the control of this information.

ASPIN has recommended:

That CRS be the point of contact for requests for intelligence information from outside or within the Agency.

Only those data which are accessioned or generated by the reverence center will be provided in response to direct requests. All other data sought will be requested from other information centers which have the resources to respond.

Current work on the automated dissemination system should be maintained.

Ultimately all SI, State, Defense and Agency positive intelligence should be disseminated via a machine-aided system.

Substantive analysts should be encouraged to influence the indexing efforts of CRS.

A standardized document reference number scheme should be developed -- initially for internal Agency use, ultimately for community-wide use.

A standard scheme of document indexing by a reference center should be established by high level management decision.

The CRS should create an index, or indices to other organized collections of information in the Agency.

The present system of document storage and retrieval should be maintained; the speed of delivery of documentary material should be improved.

An extensive interactive capability with regard to the CRS intelligence document index should be developed and tested as quickly as feasible.

Research and Development in Information Processing

We observed a number of problems associated with R&D in ADP matters as conducted by the Agency, the more significant are:

The physical separation of ORD/An does little to contribute to user -- developer communications.

Most R&D has been conducted by external contractors with ORD/An serving as a broker and furnishing funds. This has led to undue influence on development efforts by non-Agency elements and insufficient influence by the customer by virtue of not controlling the funding of projects.

The R&D efforts of ORD/An have not been sufficiently esoteric and sophisticated to establish a clear dichotomy between the programs pursued by ORD and those of OCS.

R&D has had a tendency to be oriented toward the novel in terms of hardware rather than tailoring projects to work on OCS machinery.

ASPIN has recommended that the DD/S&T review the division of effort between ORD and OCS in the area of ADP with the end in view of:

a. Moving problem definition and computer application design and development to OCS from ORD.

b. Transferring standard ADP equipment from ORD to OCS to provide OCS with the facility to conduct appropriate R&D.

c. Transferring other equipment to anticipated development programs or declare it surplus.

d. Conduct a review of existing ORD contracts via the IPS and prospective users to determine which should be continued and under whose cognizance.

e. Subsequent ADP equipment or software test and analysis be conducted by OCS except where the items are in direct support of a special processing center such as NPIC.

f. OCS issuing a current awareness publication to announce new activities, products and developments of general interest to those engaged in ADP.

ASPIN recommends that the DD/S&T and the IPB reject the proposal of the IHC which would provide for a community wide R&D center.

Finally we recommend that R&D projects in the realm of ADP be submitted to the same scrutiny and review as for other significant projects within the Agency.

Organizational and Management Elements of Automatic Data Processing

This part of the ASPIN Report should be read in its entirety by senior officials of the Support Directorate. Its conclusions and recommendations are far-reaching and have both direct and indirect impact on the Directorate. The conclusions and recommendations must be read within the context of the total discussion of Part VI of the report and with the paper prepared by the

25X1A contract consultant firm, [redacted] The appendices of this part of the report should be of particular interest to the Office of Logistics and all elements of the Support Directorate engaged in ADP activities.

Office Studies

It is difficult indeed to reduce the fund of statistical information and observations made in the individual office studies to a simple summary. The material contained in these studies covers a wide range of specificity and subject matter and the conclusions and reocmmendations reached have been incorporated in the general Parts of the Report.

25X1A [redacted] Working Papers

During the course of the ASPIN Study certain problem areas were identified that appeared amenable to solution by an outside

25X1A contractor. A contract was let with [redacted] to conduct further study of these problems and Annex II of the ASPIN Report contains a set of 6 working papers produced by the contractor. A summary of these working papers is presented below.

TEXT PROCESSING SYSTEMS

CIA is developing several mechanized systems with text processing capabilities for current awareness and/or retrospective retrieval. Results to date indicate that marked qualitative improvements in the dissemination process will be realized and that dramatic improvements in retrospective retrieval will be experienced. Consolidation of development effort, preparation of an Agency-wide text processing plan, and elimination of some of the current systems appears a highly desirable goal.

There is a good deal of duplication of effort in text processing within the Agency. The thrust of the contractor's recommendation is that these efforts should be consolidated and the total talent presently engaged could develop a viable system of considerable quality.

COMPUTER GRAPHICS

Computer graphics appears as yet to have found little application within the production components of the Agency. Work has been done and is proceeding in three general areas which could be the basis for more extensive use of computer graphics: Automated

Map Making, Assistance to Photo Interpretation, and Assistance in Visual Cognition of Large Data Bases.

Computer graphics software development and operational costs are high. Efforts must be made to prevent the proliferation of uncoordinated development in this area which is bound to follow an increased interest in graphics applications.

ORGANIZATIONAL AND MANAGEMENT ASPECTS

The present highly decentralized management of the ADP has numerous virtues, including the encouragement of local initiative, freedom from an ADP bureaucracy, and the ability to satisfy well defined, short-term ADP needs. But it also suffers from a lack of longer-range vision, insufficient planning, inadequate control, inability to profit from experience and the absence of a central ADP focus.

Recommendations were made to:

a. strengthen the existing central review of hardware acquisition.

b. consolidate headquarters computer operations into no more than two units, and initiate a charge-back system for computer utilization;

c. establish a career service for ADP personnel;

d. retain local initiative in applications development but assign technical/functional leadership responsibility for broad areas of ADP development;

e. in general, continue local planning for ADP support, but strengthen central review.

f. establish a full-time post of ADP advisor to the Executive Director.

This entire paper should be reviewed by senior officials of the Support Directorate.

TEXT STREAM PROCESSING: DRAFTING, EDITING AND PRINTING

Text stream processing, in the eyes of the contractor, undoubtedly can find wide applicability in the Agency, provided the system designs can be kept fairly simple and that development efforts be useful to several activities.

The contractor recommends:

a. A small task force be assembled to obtain more detailed information of this subject within the Agency to uncover the characteristics, requirements and priorities of those activities which could benefit from text stream processing and the composing process.

STATSPEC

b. [redacted] should be encouraged to examine how plans

STATSPEC

for automating the [redacted] can be accelerated, and to make use of text stream processing at an earlier date than presently proposed. It is felt that the methods developed

STATSPEC

for [redacted] could have applicability to other activities uncovered in item a above.

MONITORING, FILE PROCESSING AND COMPUTATIONAL SUPPORT TO MISSILE AND SPACE RELATED SYSTEMS

This paper treats ADP support systems for FMSAC, OSI and OEL and covers both scientific and management systems employed.

Two aspects of the paper, signal processing and machine-aided dissemination would be of particular interest to the Office of Communications. The paper is general in nature, leaning more to the need for restructuring of files rather than to sophisticated scientific applications.

STRUCTURED FILE SYSTEMS

There is a very large number of seemingly uncoordinated and overlapping development efforts within the Agency addressed to coordinate/hierarchie files. This, despite the similarity of requirements, file structures, and of computer processed employed, despite the burden that will be placed on users if they have to learn different languages, and despite the scarcity of in-house talent available. Such consideration argue for a radical reduction in the number of development efforts and the consolidation of the remainder.

The Agency should be able to buy, rather than make, its next generation of general purpose file handling systems.

The low access rate to most of these files, economics of scale in providing backup processors and direct access storage, operational complexities, and the difficulties of implementing and maintaining a bug-free operating system, argue for concentrating on-line services in the smallest possible number of computer centers.

Separate development efforts for SANCA and the DD/P's STAR now seem inevitable; but every effort should be made to assure that they can be used in a time-sharing environment with other on-line systems.

For the major Agency files (AEGIS, MISTAC, et al), a formal development plan for on-line processing, with projections of goals, costs and milestones over at least a five year period, should be put together in a standard fashion.

The Agency should decide, as a matter of policy, that on-line file-based services will be provided out of the fewest possible computer centers at headquarters.

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MEMORANDUM FOR: ADDS

space segment

aperture analogy

1. FYI — per your request.

25X1A

2. [redacted] is sending over his re-do on ASPIN today [redacted]

25X1A 25X1A

3. I still haven't received [redacted] "package" —

RPB

(DATE)

1 Sept 70.

FORM NO. 1 AUG 54 101 REPLACES FORM 10-101 WHICH MAY BE USED. (47)

MEMORANDUM FOR: ADDS

per yr. request. The earlier paper supplements this "legal brief precis" in that support impact is highlighted.

25X1A

[redacted] We have copy of this with

In light Jack Blake's query to RLB this A.M. you may wish us to have [redacted] brief?

25X1A

RPB

(DATE)

1 Sept 70.

FORM NO. 1 AUG 54 101 REPLACES FORM 10-101 WHICH MAY BE USED. (47)